Simplicity

Parts Manual

REAR TINE TILLER

AND ATTACHMENT

821RT

Mfg. No.	Description
1693207	821RT, 8HP Rear Tine Tiller

ATTACHMENT

Mfg. No.	Description
1692878	Hiller/Furrower *(Ref. Info. Only)*

Rev. 12/98
TP 400-2227-00-RT-S

MANUFACTURING, INC.

500 N Spring Street / PO Box 997
Port Washington, WI 53074-0997 USA

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ATTACHMENT		**PAGES**
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Torque Specification Chart . . . . . .Inside Back Cover

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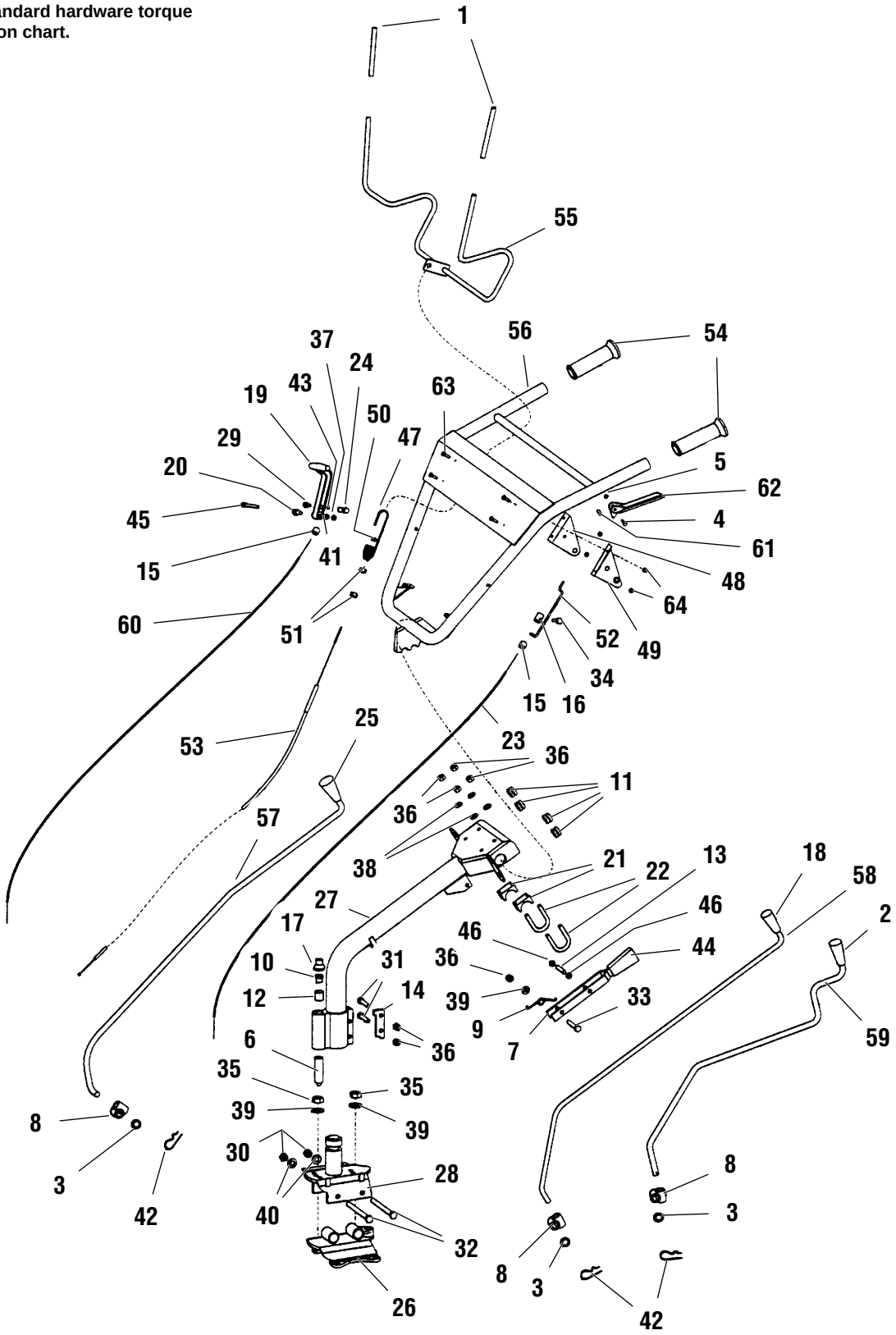
Handlebar Assembly

NOTE: Unless noted otherwise, use the standard hardware torque specification chart.

A-RT42901A



The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller

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Handlebar Assembly

REF NO.	PART NO.	QTY.	DESCRIPTION
1	1716699	2	HANDLE GRIP-Drive Control Lever
2	1718994	1	KNOB-Black, Direction Shift Rod
3	1718995	3	WASHER
4	1921961	1	BOLT-Hex Hd, 1/4-20 x 1-1/4”
5	928372	1	NUT-Keps, 1/4-20
6	1718997	1	PIN-Swivel Lock
7	1718998	1	TILT LEVER
8	1718999	3	PLASTIC PIVOT
9	1719000	1	SPRING-Tilt Lever
10	1719001	1	SPRING-Swivel Lock
11	1719002	4	RUBBER GROMMET
12	1719003	1	CABLE END-Swivel, Threaded
13	1719004	1	PIN-Latch, Tilt Lever
14	1719005	1	BASE LOCK PLATE
15	1719006	2	SHEATH END-Cable
16	1719007	1	CABLE LOCK HOLDER
17	1719008	1	SHEATH END-Lower
18	1719009	1	KNOB-Green, Tine Engage Rod
19	1719010	1	FREE WHEEL LEVER
20	1719011	1	BUSHING-Free Wheel Lever
21	1716705	2	TILT FRICTION PAD
22	1719012	2	U-BOLT
23	1719013	1	CABLE ASSEMBLY-Swivel Lever
24	1719014	1	CABLE CLAMP
25	1719015	1	KNOB-Orange, Gear Shift Rod
26	1719016	1	HANDLEBAR BASE-Lower
27	1719017	1	HANDLEBAR STEM
28	1719018	1	HANDLEBAR BASE-Upper
29	1719019	1	BOLT-Cable Clamp, 6mm x 22mm
30	1719020	2	NUT, 8mm
31	1719021	2	BOLT, 8mm x 30mm
32	1719022	2	BOLT, 8mm
33	1719023	1	BOLT, 8mm x 45mm
34	1719024	1	BOLT, 5mm x 10mm
35	1719025	2	NUT, 8mm x 1.25mm
36	1719026	7	LOCKNUT, 8mm
37	1719027	1	LOCKNUT, 6mm
38	1719028	4	WASHER-Flat, 8mm
39	1719029	3	WASHER-Wavy, 8mm
40	1719030	2	WASHER-Spring, 8mm
41	1719031	1	WASHER-Flat, 6mm
42	1719032	3	PIN-Hair
43	1719033	1	BALL-Cable Lock, 3/16”

Footnotes:

Ref Nos 44-64 listed on following page.

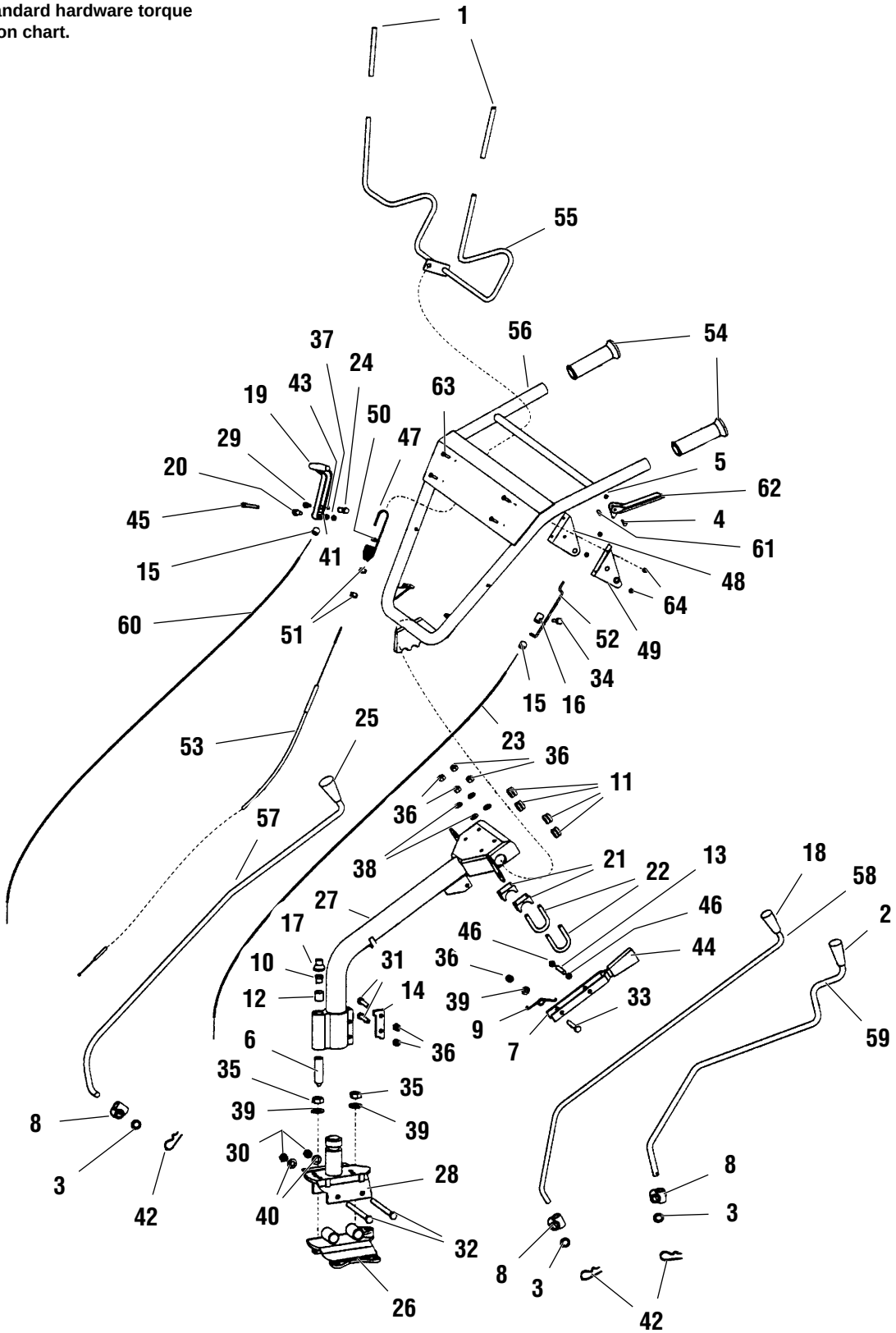
The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller

Handlebar Assembly

A-RT42901A

NOTE: Unless noted otherwise, use the standard hardware torque specification chart.



The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller

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Handlebar Assembly

REF NO.	PART NO.	QTY.	DESCRIPTION
44	1719034	1	KNOB-Plastic
45	1719035	1	BOLT, 6mm x 55mm
46	1719036	2	PUSHNUT
47	1716720	1	SPRING-Bee Hive, Forward Cable Adjust
48	1716722	1	BRACKET-Drive Control Lever, Right
49	1716723	1	BRACKET-Drive Control Lever, Left
50	1716730	1	NUT-Nyloc, #10
51	920438	2	NUT-Jam, 5/16-24
52	1716729	1	REVERSE LINK
53	1719037	1	CABLE ASSEMBLY-Drive Control Lever
54	1719038	2	HANDLE GRIP, Black, 1” No Flange
55	1719039	1	DRIVE CONTROL LEVER
56	1719040	1	HANDLEBAR-Upper
57	1719041	1	GEAR SHIFT ROD
58	1719042	1	TINE ENGAGE ROD
59	1719043	1	DIRECTION SHIFT ROD
60	1719044	1	CABLE ASSEMBLY-Free Wheel Lever
61	1719045	1	BUSHING-Swivel Lever
62	1715104	1	SWIVEL LEVER
63	1716731	4	BOLT-Hex Hd, 5mm x 0.8mm x 10mm
64	1716732	4	NUT-Nyloc, 5mm x 0.8m

Footnotes:

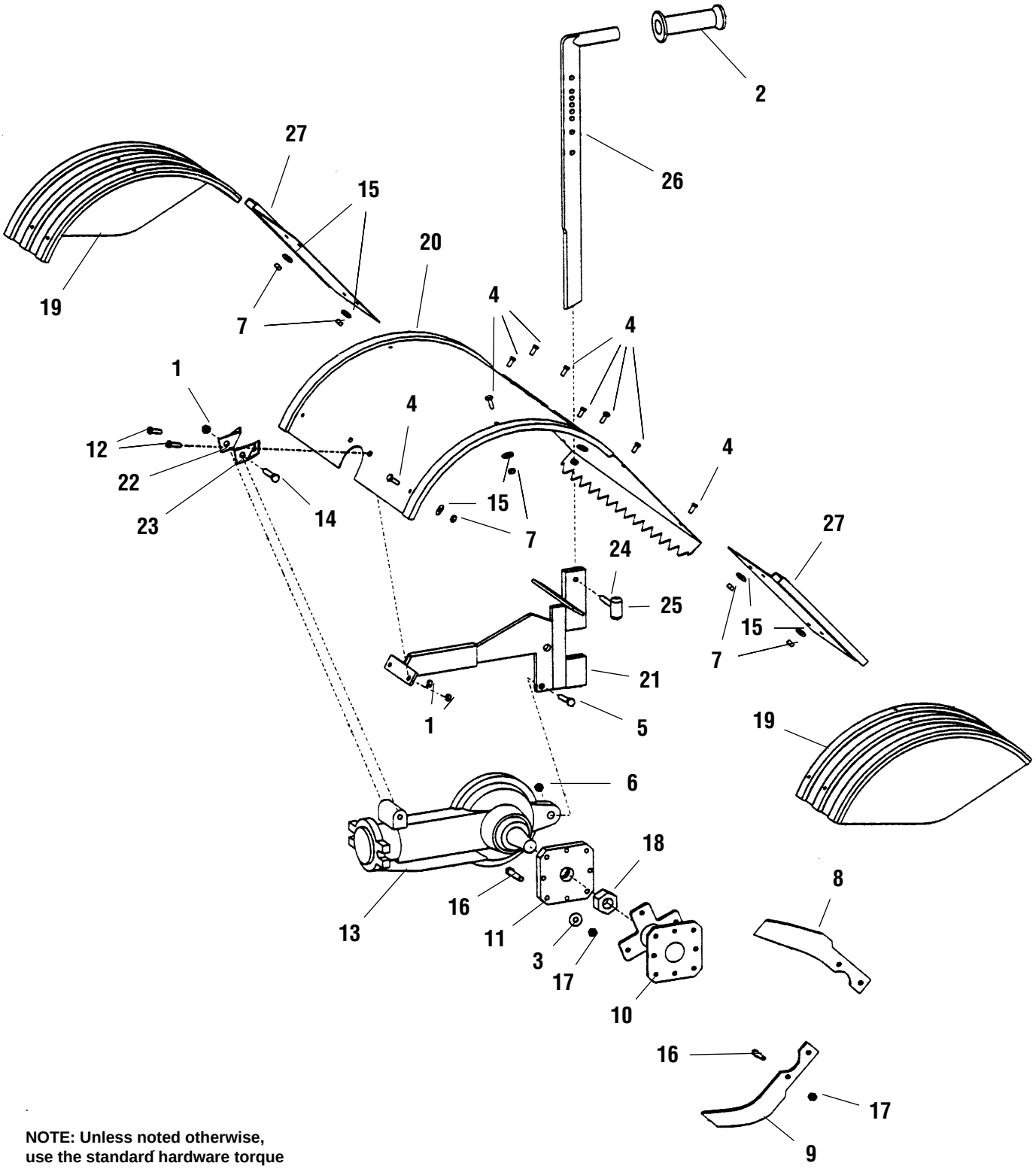
Ref Nos 1- 43 listed on previous page.

The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller

Hood, Drag Stake & Bolo Tines

A-RT42902A



NOTE: Unless noted otherwise, use the standard hardware torque specification chart.

The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller

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Hood, Drag Stake & Bolo Tines

REF NO.	PART NO.	QTY.	DESCRIPTION
1	1935048	3	NUT-Bi-Way Lock, 5/16-18
2	1716700	1	HANDLE GRIP, Black
3	1917356	5	LOCKWASHER-Spring, 5/16”
4	1921958	12	BOLT-Hex Hd, 1 /4-20 x 1 /2”
5	1921971	1	BOLT-Hex Hd, 3/8-16 x 1-3/4”
6	1916950	1	LOCKNUT-Hex, 3/8-16
7	928372	10	NUT-Keps, 1/4-20
8	1719046	8	TlNE-Bolo, Right Side
9	1719047	8	TlNE-Bolo, Left Side
10	1719048	2	HOLDER-Bolo Tine, Both Sides
11	1719049	2	HUB-Tine
12	1921333	2	BOLT-HHCS, 5/16-18 x 3”, Grade 5
13	1719050	1	TILLER DRIVE TRANSMISSION, Complete
14	1960590	1	BOLT-Hex Hd, 5/16-18 x 3”
15	1916955	10	WASHER-Flat, 1/4”
16	1719021	16	BOLT, 8mm x 30mm
17	1719025	24	NUT, 8mm x 1.25mm
18	1719053	2	NUT, 20mm x 1.50mm
19	1719054	2	SIDE SHIELD-Hood, Both Sides
20	1719055	1	HOOD-Tiller
21	1719056	1	BRACKET-Depth Regulator
22	1719057	1	BRACKET-Hood, Right Side
23	1719058	1	BRACKET-Hood, Left Side
24	1716742	1	DETENT PIN, 5/16-18 x 1”, Drag Stake
25	1716743	1	KNOB-T-Handle, Drag Stake
26	1716746	1	LEVER-Drag Stake
27	1719059	2	EXTENSlON-Hood Flap, Both Sides

Footnotes:

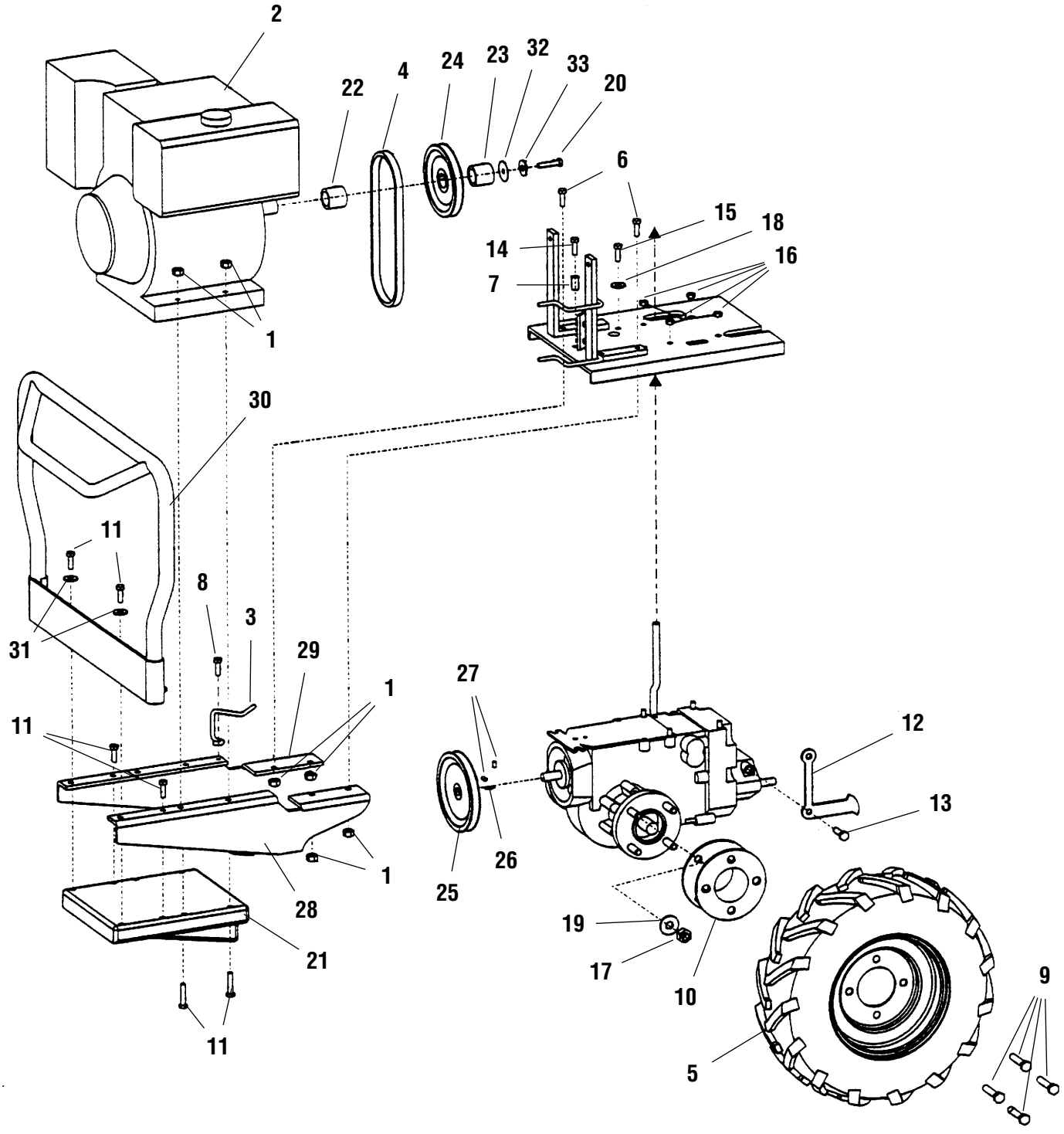
The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller

Engine Mounting, Belts & Wheels

NOTE: Unless noted otherwise, use the standard hardware torque specification chart.

A-RT42903A



The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller

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Engine Mounting, Belts & Wheels

REF NO.	PART NO.	QTY.	DESCRIPTION
1	1935048	8	NUT-Bi-Way Lock, 5/16-18
2	*	1	ENGINE-Briggs & Stratton, 8HP
3	1716767	1	GUIDE-Belt, Forward
4	1718544	1	BELT-Forward
5	1718887	1	WHEEL/TIRE ASSEMBLY, Left Side
5	1718888	1	WHEEL/TIRE ASSEMBLY, Right Side
6	1921977	4	BOLT-Hex Hd, 5/16-18 x 1-1/4”
7	1718890	1	BUSHING
8	1716780	1	BOLT-Hex Flange Hd, 5/16-18 x 3/4”, Grade 5
9	1718891	8	BOLT-Lug,1/2-20 x 3/4”
10	1718892	2	ADAPTER-Wheel
11	1921333	8	BOLT-HHCS, 5/16-18 x 3”, Grade 5
12	1719065	1	ARM-Forward/Reverse Shift
13	1718894	1	BOLT-Hex Hd, 6mm x 14mm
14	1716715	1	BOLT-Hex Hd, 8mm x 16mm
15	1718895	2	BOLT-Hex Hd, 8mm x 22mm
16	1719025	4	NUT, 8mm x 1.25mm
17	1718873	8	NUT, 12mm x 1.25mm
18	1719029	2	WASHER-Wavy, 8mm
19	1718896	8	WASHER,12mm
20	1960384	1	BOLT-Hex Hd, 7/16-20NF x 1 “, Grade 5
21	1718898	1	WEIGHT CASTING
22	1718899	1	SPACER-Engine Pulley, Short, Engine Side
23	1718900	1	SPACER-Engine Pulley, Long
24	1718901	1	PULLEY-Drive, Engine Forward
25	1718902	1	PULLEY-Drive, Transmission
26	1718903	1	KEY-Half Moon
27	1718904	2	SETSCREW
28	1718905	1	BRACKET-Motor Mount, Left
29	1718906	1	BRACKET-Motor Mount, Right
30	1718907	1	BUMPER GUARD
31	1960044	2	WASHER-Flat, 5/16”
32	1919384	1	WASHER-Flat, 7/16”
33	1918199	1	WASHER-Spring Loc, 7/16”

Footnotes:

*See your local Briggs & Stratton distributor for service parts.

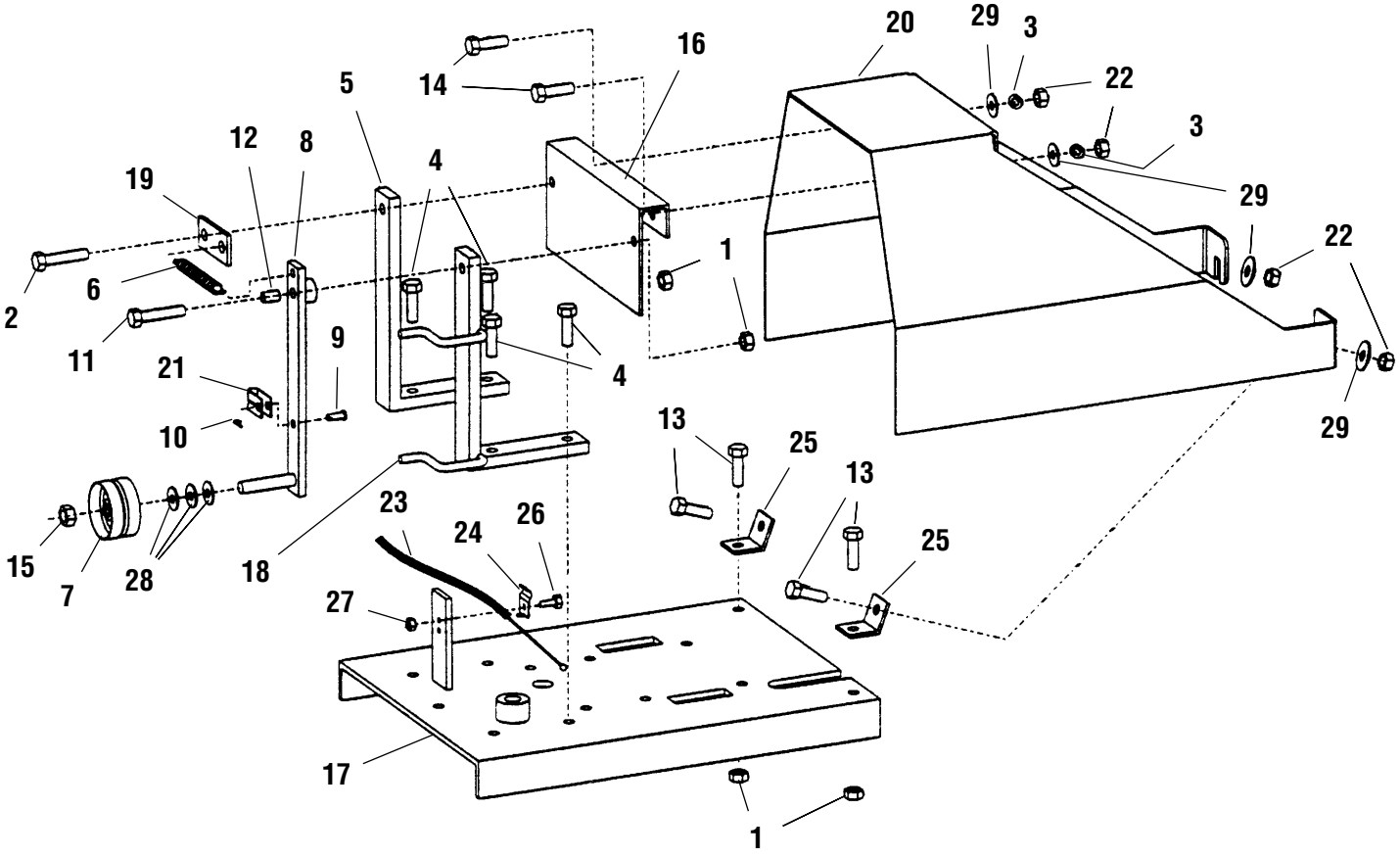
The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller

Shifting Mechanism

NOTE: Unless noted otherwise, use the standard hardware torque specification chart.

A-RT42904A



The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller

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Shifting Mechanism

REF NO.	PART NO.	QTY.	DESCRIPTION
1	1935048	4	NUT-Bi-Way Lock, 5/16-18
2	1921221	1	BOLT-Hex Hd, 5/16-18 x 1-1/2", Grade 5
3	1917356	2	LOCKWASHER-Spring, 5/16"
4	1921977	4	BOLT-Hex Hd, 5/16"-18 x 1-1/4", Grade 5
5	1716801	1	MOUNTING BAR-Shift Mechanism
6	1716802	1	SPRING-Idler Arm
7	1716803	1	PULLEY-Forward Idler
8	1716804	1	IDLER ARM-Forward
9	1716702	1	LINK PIN-Forward
10	1716703	1	COTTER PIN
11	1921978	1	BOLT-Hex Hd, 5/16-18 x 2, Grade 5
12	1716704	1	BUSHING-Pivot, 5/16"
13	1716780	4	BOLT-Hex Flange Hd, 5/16-18 x 3/4", Grade 5
14	1921332	2	BOLT-Hex Hd, 5/16-18 x 3/4"
15	1916950	1	NUT-Hex, 3/8-16
16	1718872	1	SUPPORT BRACKET-Belt Cover
17	1718874	1	COVER-Transmission Wheel Housing
18	1719060	1	MOUNTING BAR-Shift Mechanism, w/Forward Belt Guides
19	1719061	1	PLATE-Shift Mech Mounting Bar
20	1719062	1	BELT COVER
21	1716728	1	YOKE-Cable
22	1917372	4	NUT-Non Locking, 5/16-18
23	1719037	1	CABLE ASSEMBLY-Drive Control Lever
24	1719063	1	C-CLAMP, Drive Control Cable
25	1719064	2	MOUNTING BRACKET-Belt Cover
26	1716731	1	BOLT-Hex Hd, 5mm x 0.8mm x 10mm
27	1716732	1	NUT-Nyloc, 5mm x 0.8mm
28	1924940	3	WASHER-Flat, 3/8"
29	1960044	4	WASHER-Flat, 5/16"

Footnotes:

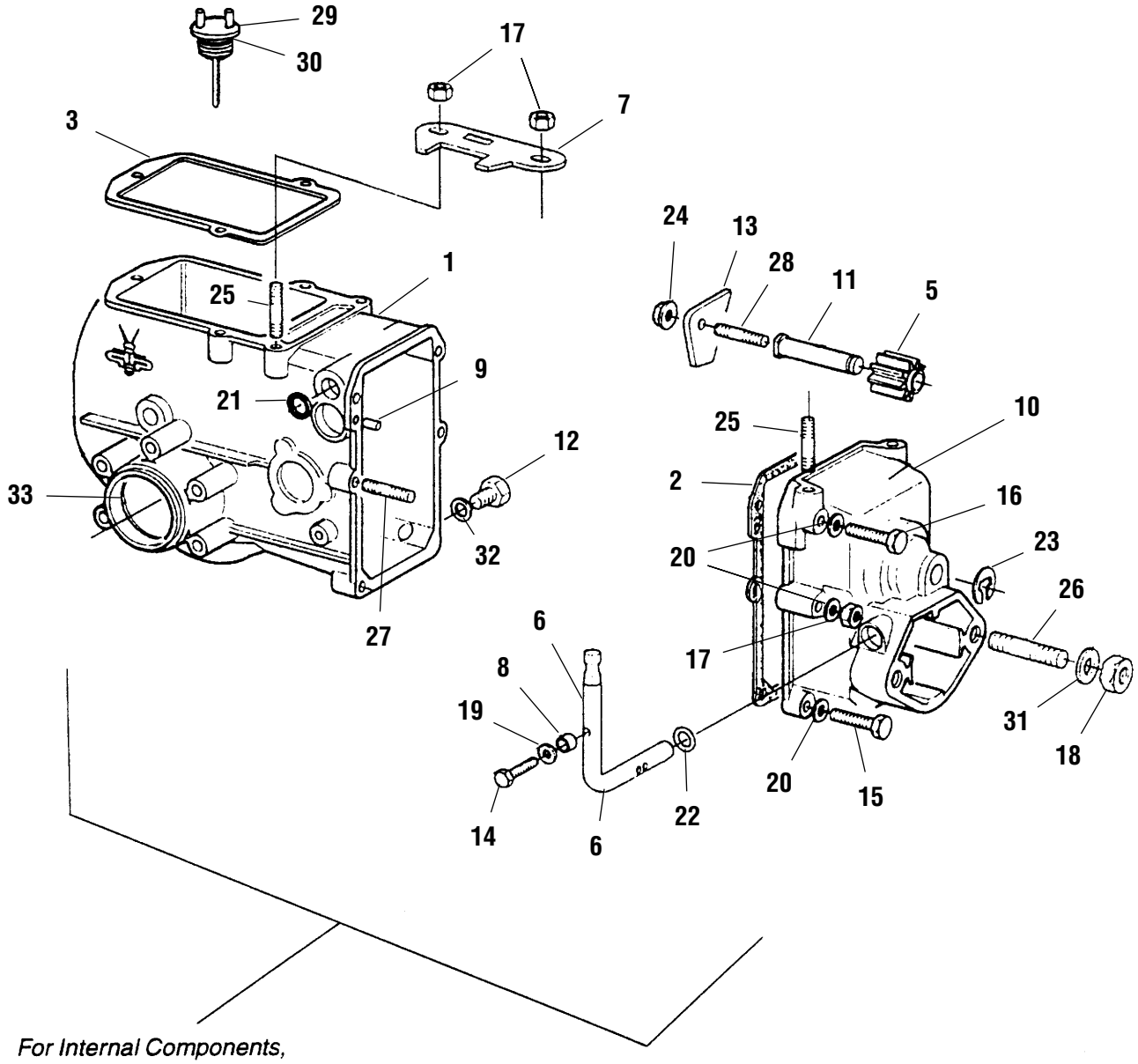
The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller

Transmission Housing

NOTE: Unless noted otherwise, use the standard hardware torque specification chart.

A-RT42905A



For Internal Components, See Wheel Transmission Assembly

The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller

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Transmission Housing

REF NO.	PART NO.	QTY.	DESCRIPTION
1	1718860	1	WHEEL DRIVE TRANSMlSSlON-Complete, Bolt-On
2	1718861	1	GASKET-Housing, Front
3	1718862	1	GASKET-Housing, Top
5	1718863	1	GEAR-Reverse Jack Shift
6	1719085	1	ARM-PTO Engage
7	1718864	1	STOP PLATE-Forward/Reverse
8	1719086	1	BUSHING
9	1718865	1	PIN-Dowel, 6mm x 16mm
10	1718866	1	COVER- Rear Transmission Housing
11	1718867	1	STUB SHAFT, Jack Shift
12	1718868	1	BOLT, Drain Plug
13	1718869	1	KEEPER
14	1719087	1	BOLT, 6mm x 16mm
15	1719021	2	BOLT, 8mm x 30mm
16	1719023	3	BOLT, 8mm x 45mm
17	1719025	3	NUT, 8mm x 1.25mm
18	1718873	2	NUT, 12mm x 1.25mm
19	1719088	1	WASHER, 6mm
20	1719029	5	WASHER-Wavy, 8mm
21	1719074	1	SEAL-N/1/2 Arm, 12mm x 19mm x 5mm
22	1709089	1	SEAL-PTO Engage Arm
23	1718876	1	SNAP RING-C Clip
24	1718877	1	LOCKNUT, 8mm
25	1718878	4	STUD, 8mm x 20mm
26	1718879	2	STUD, 12mm x 30mm
27	1718880	1	STUD, 8mm x 45mm
28	1718881	1	STUD, 8mm
29	1718882	1	DIP STICK, Plastic
30	1718883	1	O-RING, Dip Stick
31	1718884	2	WASHER-Flat,12mm
32	1718885	1	WASHER-Nylon, Drain Plug
33	1718886	1	SEAL

Footnotes:

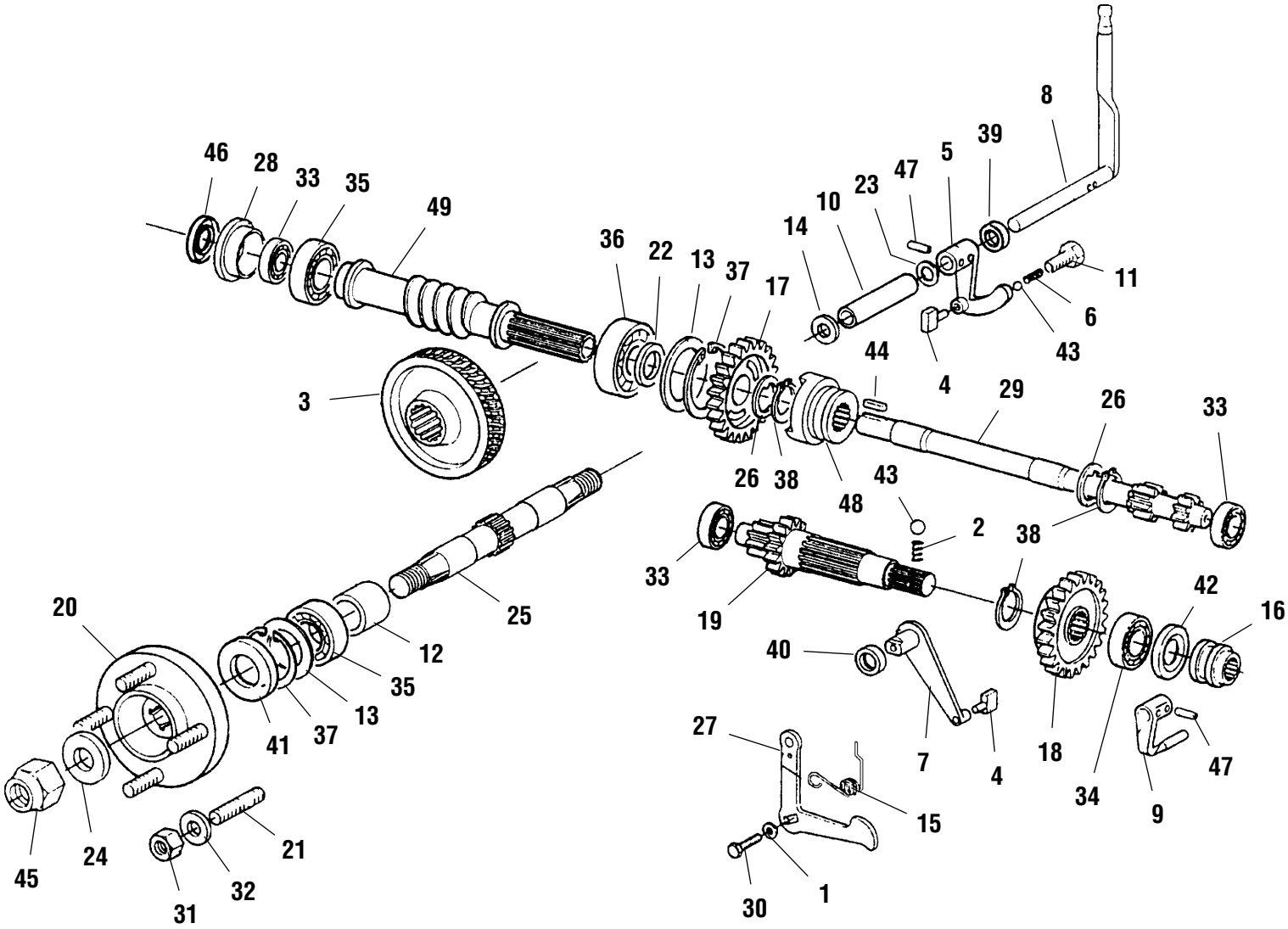
The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller

Wheel Transmission Assembly

NOTE: Unless noted otherwise, use the standard hardware torque specification chart.

A-RT42906A



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Wheel Transmission Assembly

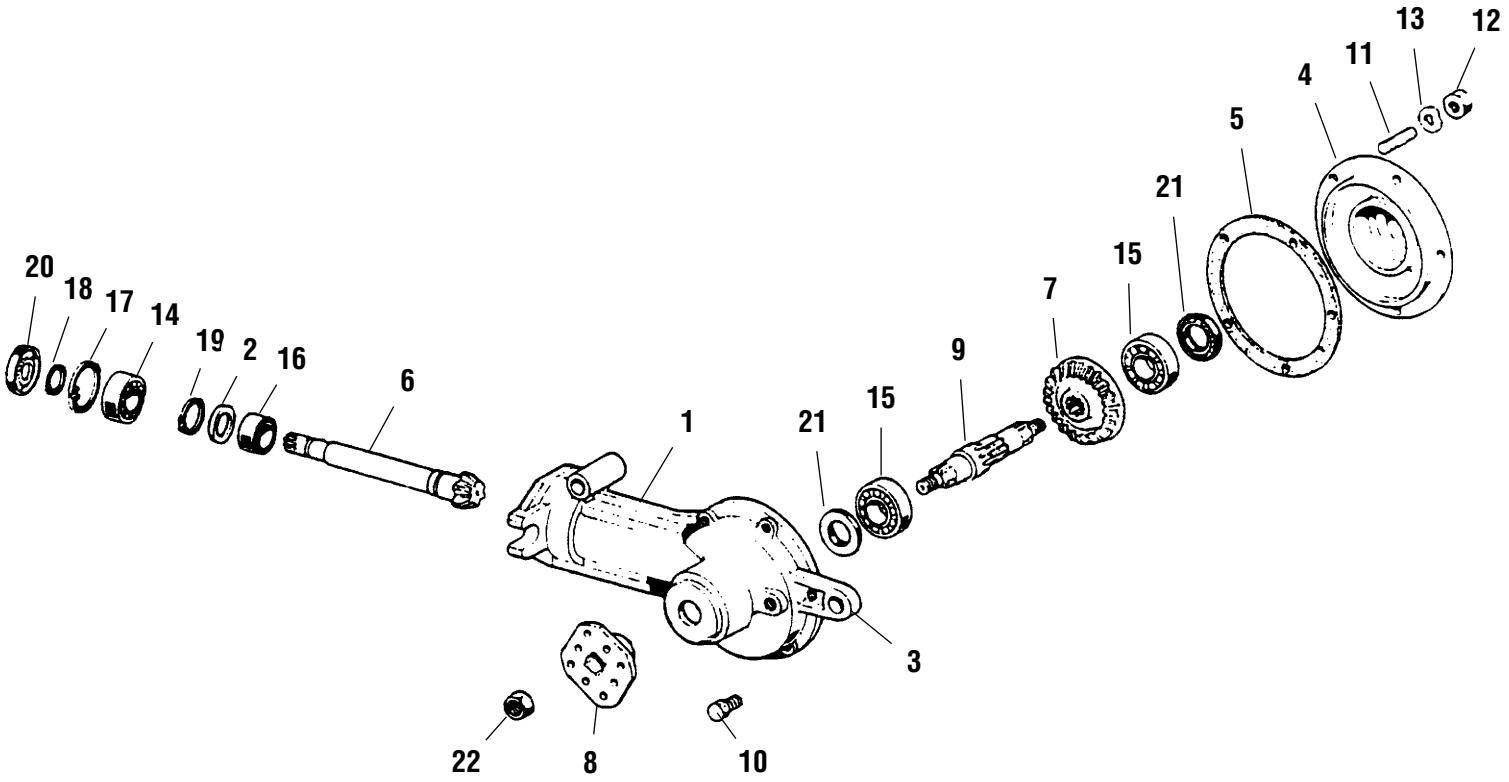
REF NO.	PART NO.	QTY.	DESCRIPTION
1	1718910	1	WASHER
2	1718911	1	SPRING-Compression, 1/4''
3	1718912	1	GEAR-Wheel, Brass
4	1718913	2	SHIFT DOG
5	1718914	1	ARM-N/1/2, Engage
6	1718915	1	SPRING-Compression,10mm
7	1718916	1	SHIFT ARM-Forward/Reverse Pivot
8	1718917	1	ROD-Gear Shift
9	1718918	1	ARM-PTO Engage
10	1718919	1	SPACER-Sleeve
11	1718920	1	BOLT,12mm
12	1718921	2	SPACER
13	1718922	3	SHIM, 52mm x 42mm x 0, 3, 4, 5
14	1718923	1	SHIM, 20mm x 12mm x 1.50mm
15	1718924	1	SPRING, Directional Control
16	1718925	1	SPLINE HUB-PTO
17	1718926	1	GEAR, 38mm
18	1718927	1	GEAR-Reverse
19	1718928	1	SHAFT-Reverse Pinion & PTO
20	1718929	2	HUB-Wheel
21	1718930	8	STUD-Wheel
22	1718931	1	SEAL
23	1718932	1	WASHER, 20mm x 12mm x .03-.05mm
24	1718933	2	WASHER
25	1718934	1	SHAFT-Wheel Axle
26	1718935	2	WASHER-Keyed
27	1719065	1	ARM-Forward/Reverse Shift
28	1719066	1	END CAP
29	1719067	1	SHAFT-PTO Engage
30	1718894	1	BOLT-Hex Hd, 6mm x 14mm
31	1718873	8	NUT, 12mm x 1.25mm
32	1718896	8	WASHER,12mm
33	1719068	3	BEARING-PTO Shaft, 15mm x 35mm x 11 mm
34	1719069	1	BEARING-PTO Shaft, 20mm x 47mm x 14mm
35	1719070	3	BEARING-Wheel & Worm Shaft
36	1719071	1	BEARING-Worm Wheel Drive Shaft
37	1719072	3	SNAP RING, 52 I
38	1719073	3	SNAP RING, 24 E
39	1719074	1	SEAL-N/1/2 Arm, 12mm x 19mm x 5mm
40	1719075	1	SEAL-F/R, 16mm x 24mm x 4mm
41	1719076	2	SEAL-Tine Axle, (Wheel Shaft), 25mm x 52mm x 8mm
42	1719077	1	SEAL-PTO, 20mm x 35mm x 7mm
43	1719078	2	BALL-Steel, 1/4"
44	1719079	1	KEY
45	1719080	2	NUT, 20mm x 1.50mm
46	1719081	1	SEAL
47	1719082	2	PIN-Roll, 5mm x 20mm
48	1719083	1	PINION-Input
49	1719084	1	SHAFT-Worm Wheel Drive

The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller

Tine Transmission Assembly

A-RT42907A



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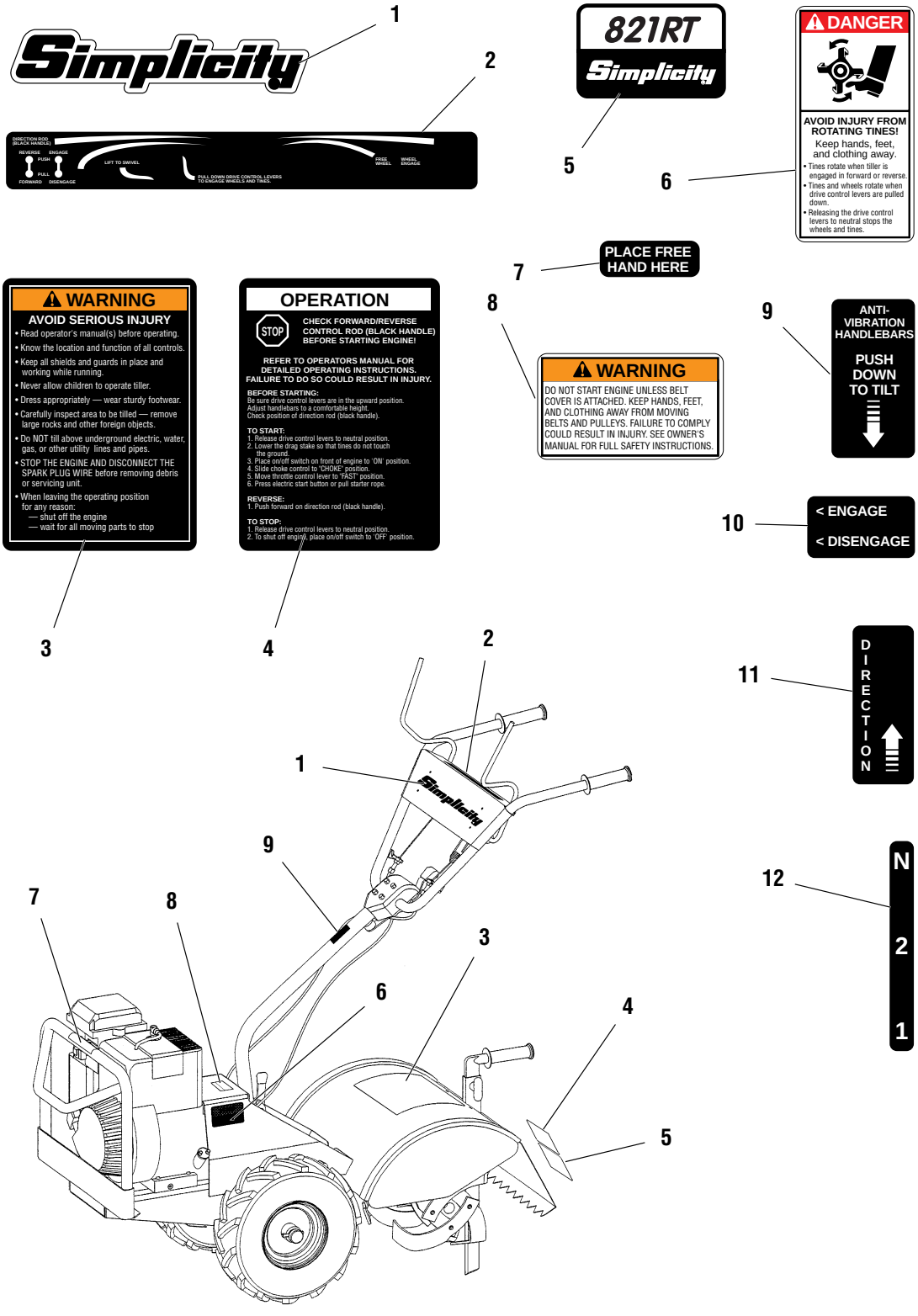
Tine Transmission Assembly

REF NO.	PART NO.	QTY.	DESCRIPTION
1	1719050	1	TILLER DRIVE TRANSMISSION, Complete
2	1719090	1	SPACER
3	1719091	1	CASTING
4	1719092	1	COVER-Casting
5	1719093	1	GASKET
6	1719094	1	PINION
7	1719095	1	GEAR
8	1719049	2	HUB-Tine
9	1719096	1	TINE AXLE
10	1719097	1	PLUG-Pipe, 1/4”, Oil Level Drain
11	1718878	5	STUD, 8mm x 20mm
12	1719025	5	NUT, 8mm x 1.25mm
13	1719029	5	WASHER-Wavy, 8mm
14	1719069	1	BEARING-Pinion, 20mm x 47mm x 14mm
15	1719098	2	BEARING-Tine Axle, 25mm x 62mm x 17mm
16	1719099	1	BEARING-Needle, 25mm x 38mm x 20mm
17	1719100	1	SNAP RING, 47 I
18	1719101	1	SNAP RING, 20 E
19	1719102	1	SNAP RING, 25 E
20	1719103	1	SEAL-Pinion, 20mm x 47mm x 7mm
21	1719076	2	SEAL-Tine Axle, (Wheel Shaft), 25mm x 52mm x 8mm
22	1719053	2	NUT, 20mm x 1.50mm

Footnotes:

The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller


1
Simplicity
2
DIRECTION ROD (BLACK HANDLE)
REVERSE
ENGAGE
PUSH
PULL
FORWARD
DISENGAGE
LIFT TO SWIVEL
PULL DOWN DRIVE CONTROL LEVERS TO ENGAGE WHEELS AND TINES.
FREE WHEEL
WHEEL ENGAGE
821RT
Simplicity
5
6
DANGER
AVOID INJURY FROM ROTATING TINES!
Keep hands, feet, and clothing away.
• Tines rotate when tiller is engaged in forward or reverse.
• Tines and wheels rotate when drive control levers are pulled down.
• Releasing the drive control levers to neutral stops the wheels and tines.
7
PLACE FREE HAND HERE
8
9
WARNING
AVOID SERIOUS INJURY
• Read operator's manual(s) before operating.
• Know the location and function of all controls.
• Keep all shields and guards in place and working while running.
• Never allow children to operate tiller.
• Dress appropriately — wear sturdy footwear.
• Carefully inspect area to be tilled — remove large rocks and other foreign objects.
• Do NOT till above underground electric, water, gas, or other utility lines and pipes.
• STOP THE ENGINE AND DISCONNECT THE SPARK PLUG WIRE before removing debris or servicing unit.
• When leaving the operating position for any reason:
— shut off the engine
— wait for all moving parts to stop
OPERATION
STOP
CHECK FORWARD/REVERSE CONTROL ROD (BLACK HANDLE) BEFORE STARTING ENGINE!
REFER TO OPERATORS MANUAL FOR DETAILED OPERATING INSTRUCTIONS. FAILURE TO DO SO COULD RESULT IN INJURY.
BEFORE STARTING:
Be sure drive control levers are in the upward position.
Adjust handlebars to a comfortable height.
Check position of direction rod (black handle).
TO START:
1. Release drive control levers to neutral position.
2. Lower the drag stake so that tines do not touch the ground.
3. Place on/off switch on front of engine to 'ON' position.
4. Slide choke control to "CHOKE" position.
5. Move throttle control lever to "FAST" position.
6. Press electric start button or pull starter rope.
REVERSE:
1. Push forward on direction rod (black handle).
TO STOP:
1. Release drive control levers to neutral position.
2. To shut off engine, place on/off switch to 'OFF' position.
WARNING
DO NOT START ENGINE UNLESS BELT COVER IS ATTACHED. KEEP HANDS, FEET, AND CLOTHING AWAY FROM MOVING BELTS AND PULLEYS. FAILURE TO COMPLY COULD RESULT IN INJURY. SEE OWNER'S MANUAL FOR FULL SAFETY INSTRUCTIONS.
ANTI-VIBRATION HANDLEBARS
PUSH DOWN TO TILT
10
< ENGAGE
< DISENGAGE
3
4
2
11
DIRECTION
1
Simplicity
9
12
N
2
1
7
8
3
6
4
5

The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller
1692878 Hiller/Furrower Attachment

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Decals

REF NO.	PART NO.	QTY.	DESCRIPTION
1	1668202	1	DECAL, Simplicity
2	1718581	1	DECAL. Console (Forward/Reverse Instructions)
3	1718579	1	DECAL, Hood (Warning)
4	1718580	1	DECAL, Hood (Operating Instructions)
5	1718870	2	DECAL, Model 821RT
6	1718582	1	DECAL, Tine Hood (Tines Danger)
7	1716839	1	DECAL, Brush Bar (Free Hand Warning)
8	1716800	1	DECAL, Belt Cover (Warning)
9	1718583	1	DECAL, Handle Bar (Tilt Lever)
10	1718586	1	DECAL, Trans. Cover (PTO Engage)
11	1718587	1	DECAL, Trans. Cover (Direction)
12	1718588	1	DECAL, Handlebar Base (Gear Shift)

Footnotes:

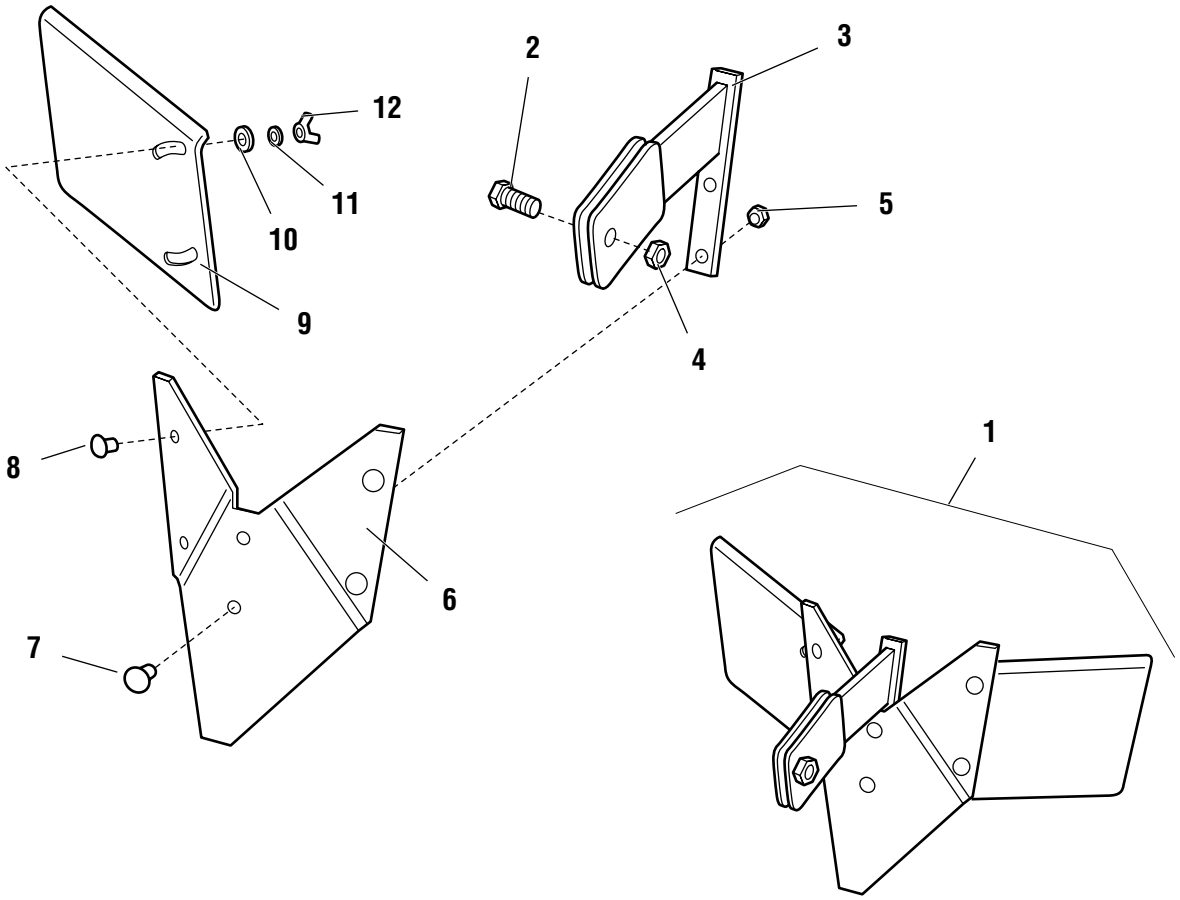
The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller

Hiller/Furrower Attachment *(Ref. Info. Only)*

NOTE: Unless noted otherwise, use the standard hardware torque specification chart.

A-RT42909A



The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller
1692878 Hiller/Furrower Attachment

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1692878 Hiller/Furrower Attachment *(Ref. Info. Only)*

REF NO.	PART NO.	QTY.	DESCRIPTION
1	1692878	1	HILLER/FURROWER, Complete (Order as Wholegood)
2	*	1	BOLT, Soc Hd, 3/8”-16 x 1-1/4”
3	*	1	BRACKET
4	*	1	NUT, Hex, 3/8” - 16
5	*	2	NUT, Nyloc, 3/8” - 16
6	*	1	BLADE, Furrower
7	*	2	BOLT, Carriage, 3/8 - 16 x 1-1/2”
8	*	4	BOLT, Carriage, 5/16” - 18 x 3/4”
9	*	1	HILLER WING, Left
9	*	1	HILLER WING, Right (Not Shown)
10	*	4	WASHER, Flat, 5/16”
11	*	4	LOCKWASHER, External Tooth, 5/16”
12	*	4	WING NUT, 5/16” - 18

Footnotes:

* Not servicable parts - components shown for ref. only.

The above parts group applies to the following Mfg. Nos.:

1693207 821RT, 8HP Rear Tine Tiller
1692878 Hiller/Furrower Attachment

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*	20	7
*	20	8
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*	20	9
*	20	10
*	20	11
*	20	12
920438	2	51
928372	2	5
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1692878	20	1
1709089	12	22
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1716699	2	1
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1716702	10	9
1716703	10	10
1716704	10	12
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1716715	8	14
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1935048	6	1
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1935048	10	1
1960044	8	31
1960044	10	29
1960384	8	20
1960590	6	14

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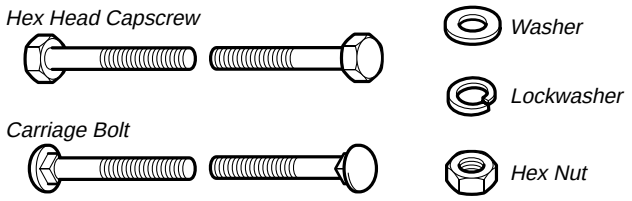
Hardware Identification & Torque Specifications

Common Hardware Types

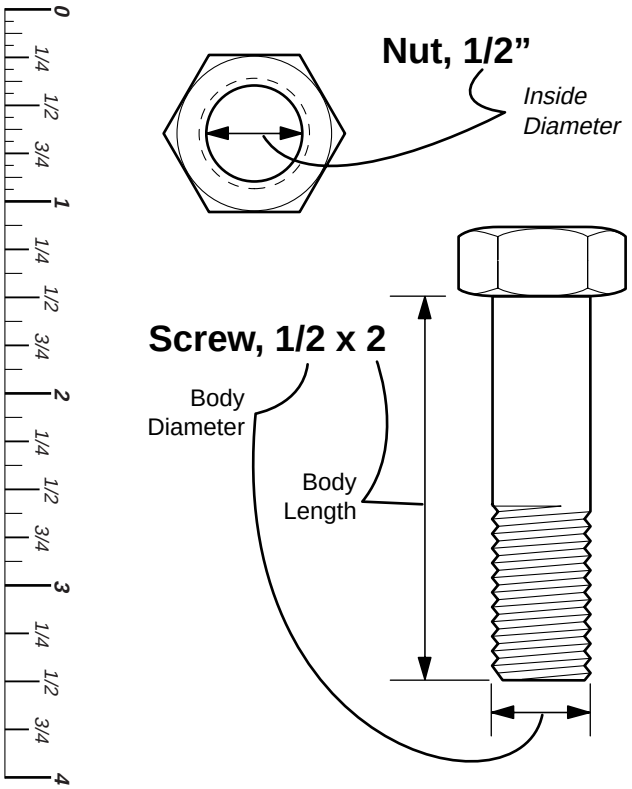


Standard Hardware Sizing

When a washer or nut is identified as **1/2"**, this is the *Nominal size*, meaning the *inside diameter* is 1/2 inch; if a second number is present it represent the *threads per inch*

When bolt or capscrew is identified as **1/2 - 16 x 2"**, this means the *Nominal size*, or *body diameter* is 1/2 inch; the second number represents the *threads per inch* (16 in this example, and the final number is the *body length* of the bolt or screw (in this example 2 inches long).

The guides and ruler furnished below are designed to help you select the appropriate hardware and tools.



Torque Specification Chart

FOR STANDARD MACHINE HARDWARE (Tolerance ± 20%)

Hardware Grade	SAE Grade 2		SAE Grade 5		SAE Grade 8	
Size Of Hardware	*in/lbs* **ft/lbs**	Nm.	*in/lbs* **ft/lbs**	Nm.	**in/lbs** **ft/lbs**	Nm.
8-32	*19*	2.1	*30*	3.4	*41*	4.6
8-36	*20*	2.3	*31*	3.5	*43*	4.9
10-24	*27*	3.1	*43*	4.9	*60*	6.8
10-32	*31*	3.5	*49*	5.5	*68*	7.7
1/4-20	*66*	7.6	**8**	10.9	**12**	16.3
1/4-28	*76*	8.6	**10**	13.6	**14**	19.0
5/16-18	**11**	15.0	**17**	23.1	**25**	34.0
5/16-24	**12**	16.3	**19**	25.8	**27**	34.0
3/8-16	**20**	27.2	**30**	40.8	**45**	61.2
3/8-24	**23**	31.3	**35**	47.6	**50**	68.0
7/16-14	**30**	40.8	**50**	68.0	**70**	95.2
7/16-20	**35**	47.6	**55**	74.8	**80**	108.8
1/2-13	**50**	68.0	**75**	102.0	**110**	149.6
1/2-20	**55**	74.8	**90**	122.4	**120**	163.2
9/16-12	**65**	88.4	**110**	149.6	**150**	204.0
9/16-18	**75**	102.0	**120**	163.2	**170**	231.2
5/8-11	**90**	122.4	**150**	204.0	**220**	299.2
5/8-18	**100**	136	**180**	244.8	**240**	326.4
3/4-10	**160**	217.6	**260**	353.6	**386**	525.0
3/4-16	**180**	244.8	**300**	408.0	**420**	571.2
7/8-9	**140**	190.4	**400**	544.0	**600**	816.0
7/8-14	**155**	210.8	**440**	598.4	**660**	897.6
1-8	**220**	299.2	**580**	788.8	**900**	1,244.0
1-12	**240**	326.4	**640**	870.4	**1,000**	1,360.0

NOTES

1. These torque values are to be used for all hardware excluding: locknuts, self-tapping screws, thread forming screws, sheet metal screws and socket head setscrews.
2. Recommended seating torque values for locknuts:
   a. for prevailing torque locknuts - use 65% of grade 5 torques.
   b. for flange whizlock nuts and screws - use 135% of grade 5 torques.
3. Unless otherwise noted on assembly drawings, all torque values must meet this specification.

Wrench & Fastener Size Guide

1/4" Bolt or Nut
Wrench—7/16"

5/16" Bolt or Nut
Wrench—1/2"

3/8" Bolt or Nut
Wrench—9/16"

7/16" Bolt or Nut
Wrench (Bolt)—5/8"
Wrench (Nut)—11/16"

1/2" Bolt or Nut
Wrench—3/4"